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Title: **JP11307081A2: LITHIUM ION SECONDARY BATTERY AND ITS MANUFACTURE**  
 ▶ Want to see a more descriptive title highlighting what's new about this invention?

Country: **JP Japan**  
 Kind: **A2 Document Laid open to Public inspection**

Inventor(s): **MAEDA KENICHI**

Applicant/Assignee:



**SHIN KOBE ELECTRIC MACH CO LTD**

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Issued/Filed Dates: **Nov. 5, 1999 / April 17, 1998**

Application Number: **JP1998000107775**

IPC Class: **H01M 4//02; H01M 4//04; H01M 4//62; H01M 10//40;**

▶ Interested in classification by use rather than just by description?

Priority Number(s): **April 17, 1998 JP19981998107775**

Abstract:



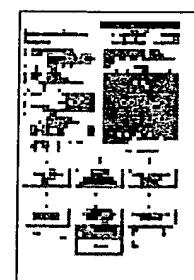
**Problem to be solved:** To suppress the deterioration of capacity and decrease the number of charge/discharge cycles of a battery by adding phosphoric ester as a surface active agent to at least one of a positive electrode material layer mainly comprising a lithium-containing composite oxide and a negative electrode material layer mainly comprising a carbon material.

**Solution:** Phosphoric ester acting as a surface active agent is added to at least one of a positive electrode material layer and a negative electrode material layer of a lithium ion secondary battery in which the positive electrode material layer mainly comprising a lithium-containing composite oxide (lithium cobaltate) and the negative electrode material layer mainly comprising a carbon material (graphite) absorbing/releasing lithium ions are stacked through a nonaqueous electrolyte layer. As the phosphoric ester, triphenyl phosphate or tricresyl phosphate is used and the adding amount is 2-20 wt.% based on the weight of the lithium-containing composite oxide or the carbon material. The phosphoric ester is eluted on the electrode surface, forms the unevenness on the electrode surface, and sufficiently heightens the wettability on the electrode surface.

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▶ See a clear and precise summary of the whole patent, in understandable terms.

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Other Abstract Info: none

Foreign References: No patents reference this one

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(19)

(11) Publication number: **11307081 A**

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**PATENT ABSTRACTS OF JAPAN**(21) Application number: **10107775**(51) Intl. Cl.: **H01M 4/02 H01M 4/04 H01M 4/62 H01M 10/40**(22) Application date: **17.04.98**

(30) Priority:

(43) Date of application publication: **05.11.99**

(84) Designated contracting states:

(71) Applicant: **SHIN KOBE ELECTRIC MACH CO LTD**(72) Inventor: **MAEDA KENICHI**

(74) Representative:

**(54) LITHIUM ION  
SECONDARY BATTERY AND  
ITS MANUFACTURE**

(57) Abstract:

**PROBLEM TO BE SOLVED:** To suppress the deterioration of capacity and decrease the number of charge/discharge cycles of a battery by adding phosphoric ester as a surface active agent to at least one of a positive electrode material layer mainly comprising a lithium-containing composite oxide and a negative electrode material layer mainly comprising a carbon material.

**SOLUTION:** Phosphoric ester acting as a surface active agent is added to at least one of a positive electrode material layer and a negative electrode material layer of a lithium ion secondary battery in which the positive electrode material layer mainly comprising a lithium-containing composite oxide (lithium cobaltate) and the negative electrode material layer mainly comprising a carbon material (graphite) absorbing/releasing lithium ions are stacked through a nonaqueous electrolyte layer. As the

phosphoric ester, triphenyl phosphate or tricresyl phosphate is used and the adding amount is 2-20 wt.% based on the weight of the lithium-containing composite oxide or the carbon material. The phosphoric ester is eluted on the electrode surface, forms the unevenness on the electrode surface, and sufficiently heightens the wettability on the electrode surface.

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**Electrode coating for lithium ion secondary cell for portable electronic devices - has anode made of lithium oxide with carbon coated cathode which are coated with phosphate surfactant**

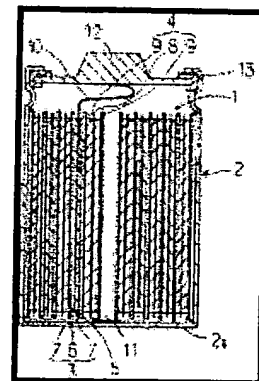
Assignee: **SHIN KOBE ELECTRIC MACHINERY** Standard company ([KOBE...](#))  
Inventor(s): **none**

Accession / Update: **2000-119144 / 200017**

IPC Class: **H01M 4/02 ; H01M 4/04 ; H01M 4/62 ; H01M 10/40 ;**

Derwent Classes: **L03; X16;**

Manual Codes: **L03-E01B3**(Graphite electrodes) , **L03-E01B5**(Alkali metal electrodes and unspecified electrodes for alkaline cells) , **X16-B01F1**(Lithium-based) , **X16-E01C1**(Oxides, complex oxides) , **X16-E09**(Other electrode aspects)



Derwent Abstract

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(JP11307081A) **Novelty** - Anode (3) made of lithium containing multiple oxide and carbon content cathode (4) are provided in non-aqueous electrolyte. Both anode and cathode are covered with 2-20 weight percent of triphenyl phosphate surfactant.

**Detailed Description** - An INDEPENDENT CLAIM is also included for manufacturing method of lithium ion secondary battery.

**Use** - For lithium ion secondary battery used in portable electronic devices.

**Advantage** - Suppresses capacitive reduction of battery and durability by maintaining wetting state of electrolyte suitably using surfactant.

Abstract info: **JP11307081A; Dwg.1/2**

Images:

**Description of Drawing** - The figure shows the end elevation of lithium ion secondary battery. (3) Anode; (4) Cathode.

Family:

<b>Patent</b>	<b>Issued</b>	<b>DW Update</b>	<b>Pages</b>	<b>Language</b>	<b>IPC Class</b>
<b>JP11307081A *</b>	Nov. 05, 1999	200011	5	English	H01M 4/02
Local apps.: JP1998000107775 ApplDate:1998-04-17 (98JP-0107775)					

Priority Number(s):

Application Number	Application Date	Original Title
JP1998000107775	April 17, 1998	LITHIUM ION SECONDARY BATTERY AND ITS MANUFACTURE

Title Terms:

ELECTRODE COATING LITHIUM ION SECONDARY CELL PORTABLE ELECTRONIC DEVICE  
ANODE MADE LITHIUM OXIDE CARBON COATING CATHODE COATING PHOSPHATE  
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